



# BCM SCHOOL

A Senior Secondary School of BCM Foundation, Affiliated to CBSE,

Sector 32 -A, Chandigarh Road, Ludhiana

## HOLIDAYS HOMEWORK

### CLASS – XI (SCIENCE)

#### SUBJECT:- ENGLISH

Dear students

As per CBSE guidelines students of class XI will prepare a project work. It must be done individually. There will be one project file on any one of the topics given below:

Topics:

- Co-education – a boon or a bane : Discussing the positive and negative effects of Co-Education on young people's lives.
- Road Rage : : Raising awareness about this problem and ways to cope with this problem.
- Impact of Social media on youth: Discussing the positive and negative effects of social media on young people's lives.
- Brand crazy youth : Discussing the effects of brand craziness on young people's lives.
- Animal Rights : Raising awareness about animal rights and ways to protect animals from cruelty.
- War : A situation or a period of fighting between countries or a group of people?

Following points to be considered:

- Students can choose any one topic of their choice and do any one activity based on the topic. Activities are:
  - Interview
  - One act play
  - Audio/video presentation
  - listen to Podcasts /Documentaries.
- Project to be divided into four phases: plan, research, create & present.
- What to include in the project:
  - Cover page
  - Table of contents
  - A declaration by the student.
  - Certificate of completion
  - Statement of purpose/objectives
  - Materials used (evidence of process and progress)
  - Methodology for the project
  - Description and analysis of the data/information
  - Conclusions
  - Photographs
  - Limitations of the research/project work
  - Recommendations
  - Students' reflection sheet ( what worked well, areas that need improvement, my action plan for improvement)
  - Bibliography/ reference

#### SUBJECT:-CHEMISTRY

##### **CHAPTER –1: SOME BASIC CONCEPTS OF CHEMISTRY**

1. How many moles of NaOH are contained in 27 ml of 0.15 M?

2. Calculate the number of atoms in each of the following:

a - 52 moles of He

b - 52 u of He

3. Calculate the molarity of of 1 L of solution of ethanol in water in which the mole fraction of ethanol is 0.040.

4. If ten volumes of dihydrogen gas react with five volumes of oxygen gas, how many volumes of water vapour could be produced?
5. Calculate the molarity of NaOH in the solution prepared by dissolving its 4gms in enough water to form 250mL of the solution.
6. The density of 2 molal solution of NaOH is 1.10 g per ml. Calculate the molarity of the solution.
7. How many atoms and molecules of phosphorous are present in 124gms of phosphorous ( $P_4$ )?
8. A 6.9M solution of KOH in water contains 20% by weight of KOH. Calculate the density of solution.
9. Calculate the molality and molarity of 1 L solution of 93%  $H_2SO_4$ (Wt. /Vol). The density of solution is 1.84g/ml.
10. Chlorophyll the green coloring matter of plants responsible for photosynthesis contains 2.68% of magnesium by weight. Calculate the number of magnesium atoms in 2.0 g of chlorophyll.
11. Calculate molality, Molarity and mole fraction of KI if the density of 20% aqueous KI solution is 1.202 g/ml.
12. What volume of  $O_2$  at N.T.P is needed to cause the complete combustion of 200 ml of acetylene? Also calculate the volume of  $CO_2$  formed.
13. Butyric acid contains only C, H and O. A 4.24 mg sample of butyric acid is completely burned. It gives 8.45mg of  $CO_2$  and 3.46 mg of  $H_2O$ .The molecular mass of butyric acid was determined by experiment to be 8 amu. What is its molecular formula?
14. The density of water at room temperature is 1.0 g/ml. How many molecules are there in a drop of water if its volume is 0.05 ml?
15. Potassium Bromide contains 32.9% by mass of potassium. If 6.40 gm of bromine reacts with 3.60 gm of Potassium. Calculate the no. of moles of potassium which combines with bromine to form KBr.

## **CHAPTER –2 : STRUCTURE OF ATOM**

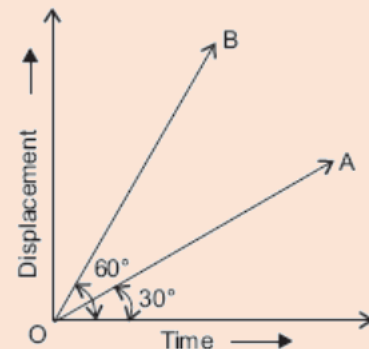
1. How can you show using Pauli's exclusion principle that p sub shell can have only 6 electrons?
2. What are the values of 'n' and 'l' for 6g?
3. How many number of unpaired electrons are present in  $Fe^{2+}$  (Z=26)?
4. What is the ratio of the energy of a photon of  $\lambda = 100\text{pm}$  to that of one of  $\lambda = 200\text{pm}$ ?
5. How many radial nodes are present in 2p and 3s orbital?
6. Out of  $Fe^{2+}$ ,  $Fe^{3+}$ , which is more stable and why?
7. Calculate the uncertainty in the position of an electron if uncertainty in its velocity is 0.001%. The mass of electron =  $9.11 \times 10^{-31}$  kg and velocity of electron = 300m/s.
8. Account for the following.
  - a. The expected electronic configuration of copper is  $[Ar] 3d^9 4s^2$  but actually it is  $[Ar] 3d^{10} 4s^1$
  - b. In building up of atoms the filling of 4s orbitals occur before 3d orbitals
  - c. Spin quantum number can have only 2 values +1/2 and -1/2
9. Write short note on the following
 

a. Aufbau principle.	d. Photo electric effect.
b. Heisenberg's uncertainty principle.	e. Black body radiation
c. Hund's rule.	

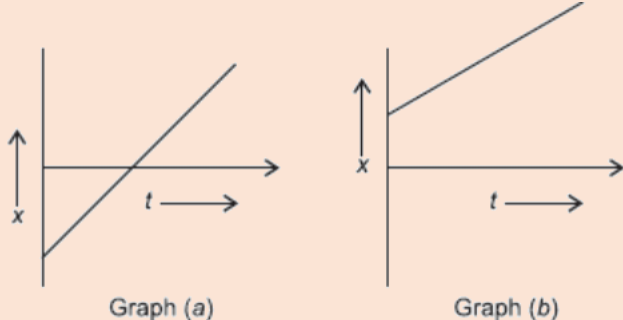
10. Derive a relationship between the wavelength associated with a moving particle and its kinetic energy.
11. Write down electronic configuration of  $\text{Fe}^{3+}$  ion and answer the following questions
- What is the number of unpaired electrons in it?
  - How many electrons in it have  $n = 3$  and  $m = 0$ ?
  - How many electrons in it have  $l = 1$ ?
  - What is the number of electron in M-shell?
12. A bulb emits light of wavelength 4500 Angstrom. The bulb is rated as 150 watt and 8% of the energy is emitted as light. How many photons are emitted by the bulb per second?
13. Identify and arrange the orbitals represented by the following in decreasing order of energy
- $n = 4, l = 0$
  - $n = 3, l = 1$
  - $n = 3, l = 2$
  - $n = 3, l = 0$
14. When a certain metal was irradiated with light of frequency  $4.5 \times 10^{16} \text{ s}^{-1}$ , the photo electrons emitted had 3 times the kinetic energy as the kinetic energy of photo electrons emitted when same metal was irradiated with light of frequency  $2.5 \times 10^{16} \text{ s}^{-1}$ . Calculate threshold frequency of the metal.
15. Light of wavelength 400 nm strikes a certain metal which has a photoelectric work function of 2.13 eV. Find out the maximum Kinetic energy of the photoelectrons. ( $1\text{eV} = 1.6 \times 10^{-19}\text{J}$ )

### SUBJECT:-PHYSICS

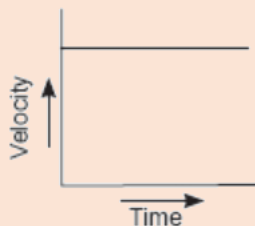
- The distance travelled by a body is directly proportional to the square of the time taken. Its acceleration
  - increases
  - decreases
  - becomes zero
  - remains constant
- A particle moving with a uniform acceleration travels 24 metre and 64 metre in first two consecutive intervals of 4 seconds each. Its initial velocity is
  - 1 m/s
  - 2 m/s
  - 5 m/s
  - 10 m/s
- A stone is dropped from a certain height and at the same time another stone is thrown horizontally from the same height which one will reach the ground earlier.
  - first stone
  - second stone
  - simultaneously
  - not sure.
- A balloon is going upwards with velocity 12 m/sec. It releases a packet when it is at a height 65 m from the ground. How much time the packet will take to reach the ground? ( $g = 10 \text{ m/s}^2$ )
  - 5 sec
  - 6 sec
  - 7 sec
  - 8 sec
- A stone is thrown with an initial speed of 4.9 m/s from a bridge in vertically upward direction. It falls down in water after 2 seconds. The height of the bridge is
  - 4.9 m
  - 9.8m
  - 19.8 m
  - 24.7 m
- A balloon starts rising from the ground with an acceleration of  $1.25 \text{ m/s}^2$ . After 8 seconds, a stone is released from the balloon. The stone will (use  $g = 10 \text{ m/s}^2$ ).
  - cover a distance of 40 m
  - have displacement of 50 m
  - reach the ground in 4 second
  - begin to move downward after being released.
- The displacement of a particle is represented by the following equation  $s = 2t^3 + 7t^2 + 5t + 8$  where 's' is in metres and t in seconds. The acceleration of the particle at  $t = 1\text{s}$  is
  - $18 \text{ m/s}^2$
  - $32 \text{ m/s}^2$
  - zero
  - $14 \text{ m/s}^2$
- The two straight rays OA and OB on the same displacement - time graph make angle  $30^\circ$  and  $60^\circ$  with time axis respectively as shown in figure.
  - Which ray represents greater velocity?
  - What is the ratio of two velocities represented by OA and OB?
- A body goes from A to B with a velocity of 40 m/s and comes back from B to A with a velocity of 60 m/s. What is the (i) average velocity during the whole journey and (ii) average speed during the whole journey?
- A body covers half of its journey with a speed of 40 m/s and other half with a speed of 60 m/s. What is the average speed during the whole journey?
- A car moving at a speed of 10 m/s is accelerated at the rate of  $2 \text{ m/s}^2$ . Find out the velocity after 6 sec.
- A ball is thrown vertically upwards. Draw its: (i) velocity-time curve (ii) acceleration-time curve.



- 13 Two bodies of different masses  $m_1$  and  $m_2$  are dropped from two different heights 'a' and 'b'. What is the ratio of time taken by the two to drop through these distances?
- 14 The distance covered by a body is found to be directly proportional to the square of time. Is the body moving with uniform velocity or uniform acceleration? If the distance travelled be directly proportional to time.
- 15 A jet aeroplane travelling at the speed of  $500 \text{ km h}^{-1}$  ejects its products of combustion at the speed of  $1500 \text{ km h}^{-1}$  relative to the jet plane. What is the speed of the latter with respect to an observer on the ground?
- 16 What is common between two graphs shown below?



- 17 A ball is thrown vertically up with a velocity of  $20 \text{ m/s}$ . Construct acceleration-time and displacement-time graph.
- 18 Two balls of different masses are thrown vertically upwards with same initial speed. Which one will rise to the greater height? Which of the two will come back with greater speed to the point of projection?
- 19 What is the position at any time, for a body starting from rest, with an acceleration  $a = \alpha t^2$ ?
- 20 Two parallel rail tracks run north-south. Train A moves due north with a speed of  $54 \text{ km h}^{-1}$  and train B moves due south with a speed of  $90 \text{ km h}^{-1}$ . What is the relative velocity of B with respect to A in  $\text{m s}^{-1}$ ?
- 21 Velocity-time graph of a moving object is shown below. What is the acceleration of the object? Also draw displacement-time graph for the motion of the object.



- 22 Two cars A and B are running at velocities of  $60 \text{ km/hr}$  and  $45 \text{ km/hr}$  respectively. Calculate the relative velocity of car A if:
- they are both travelling eastwards and
  - car A is travelling eastwards and car B is travelling westwards.
- 23 A woman starts from her home at 8.00 a.m., walks with a speed of  $5 \text{ km/hr}$  on a straight road upto her office 5 km away stays at the office upto 4 p.m., and returns home by an auto with a speed of  $25 \text{ km/hr}$ . Choose suitable scales, and plot the  $x-t$  graph of her motion.
- 24 A body starts accelerating uniformly with a from a velocity 'u' and travels in a straight line. Prove that it covers a length of  $u + a/2 (2t-1)$  in the  $t$  th second of motion.
- 25 The distance  $x$  travelled by a body in a straight line is directly proportional to  $t^2$ . Decide on the type of motion associated. If  $x \propto t^3$  what change will you observe?
- 26 Draw the following graphs for an object under free fall :
- Variation of acceleration with respect to time.
  - Variation of velocity with respect to time.
  - Variation of distance with respect to time.
- 27 A body starting from rest accelerates uniformly along a straight line at the rate of  $10 \text{ ms}^{-2}$  for 5 seconds. It moves for 2 seconds with uniform velocity of  $50 \text{ ms}^{-1}$ . Then it retards uniformly and comes to rest in 3s. Draw velocity-time graph of the body and find the total distance travelled by the body.
- 28 The displacement (in metre) of a particle moving along x-axis is given by  $x = 18t + 5t^2$ . Calculate:
- the instantaneous velocity at  $t = 2s$ ,
  - average velocity between  $t = 2s$  and  $t = 3s$ , and
  - instantaneous acceleration.
- 29 (a) With the help of a simple case of an object moving with constant velocity show that the area under velocity-time curve represents the displacement over a given time interval.

$$x = v_0 t + \frac{1}{2}at^2 \text{ graphically.}$$

(b) Establish the relation

(c) A car moving with a speed of 126 km/h is brought to a stop within a distance of 200 m. Calculate the retardation of the car and the time required to stop it.

30 Draw velocity–time graph of uniformly accelerated motion in one dimension. From the velocity time graph of uniform accelerated motion, deduce the equations of motion in distance and time.

31 Derive an equation for the distance covered by a uniformly accelerated body in nth second of its motion. A body travels half its total path in the last second of its fall from rest. Calculate the time of its fall.

32 A ball is dropped from a height of 90 m on a floor. At each collision with the floor, the ball loses one-tenth of its speed. Plot the speed-time graph of its motion between  $t = 0$  to 12 s.

33 A boy standing on a stationary lift (open from above) throws a ball upwards with the maximum initial velocity he can, equal to  $49 \text{ ms}^{-1}$ . How much time does the ball take to return to his hands? If the lift starts moving up with a uniform speed of  $5 \text{ ms}^{-1}$  and the boy again throws the ball up with the maximum speed he can, how long does the ball take to return to his hands?

34 The speed of a motor launch w.r.t still water is  $7 \text{ ms}^{-1}$  and the speed of the stream is  $3 \text{ ms}^{-1}$ . When the launch began travelling upstream, a float was dropped from it. The launch travelled 4.2 km upstream, turned about and caught up with the float. How long is it, before the launch reached the float?

35 On a two-lane road, car A is travelling with a speed of  $36 \text{ kmh}^{-1}$ . Two cars B and C approach car A in opposite directions with a speed of  $54 \text{ kmh}^{-1}$  each. At a certain instant, when distance AB is equal to AC, both being 1 km, B decides to overtake A before C does. What minimum acceleration of car B is required to avoid an accident?

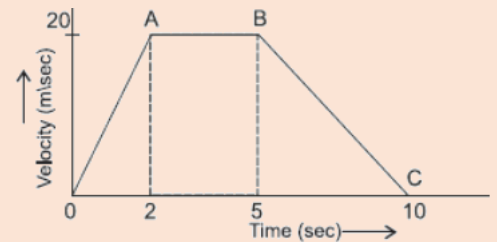
36 Two towns A and B are connected by a regular bus service with a bus leaving in either direction every T minutes. A man cycling with a speed of  $20 \text{ kmh}^{-1}$  in the direction A to B notices that a bus goes past him every 18 minutes in the direction of the motion, and every 6 minutes in the opposite direction. What is the period T of the bus service and with what speed (assumed constant) do the buses ply on the road?

37 The velocity-time graph of an object moving along a straight line is as shown.

Calculate distance covered by object between:

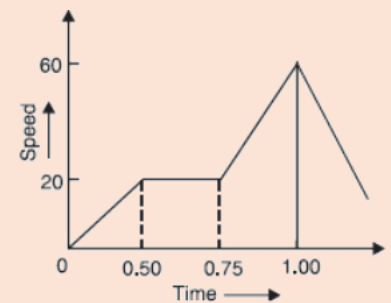
(i)  $t = 0$  to  $t = 5$  sec.

(ii)  $t = 0$  to  $t = 10$  sec.



38 Two trains A and B of length 400 m each are moving on two parallel tracks with a uniform speed of  $72 \text{ kmh}^{-1}$  in the same direction, with A ahead of B. The driver of B desires to overtake A and accelerates by  $1 \text{ ms}^{-2}$ . If, after 50 s, the guard of B just brushes past driver of A, calculate the original distance between the two trains.

39 A highway motorist travels at a constant velocity of  $45 \text{ kmh}^{-1}$  in a  $30 \text{ kmh}^{-1}$  zone. A motor-cyclist police officer has been watching from behind a bill board and at the same moment the speeding motorist passes the bill board, the police officer accelerates uniformly from rest to overtake her. If the acceleration of the police officer is  $10 \text{ kmh}^{-2}$ , how long does he take to reach the motorist?



40 A train moves from one station to another in two hours' time. Its speed during the motion is shown in the graph. Determine the maximum acceleration during the journey. Also calculate the distance covered during the time interval from 0.75 h to 1 hour.

41 A car moving with a speed of  $50 \text{ kmh}^{-1}$  can be stopped by brakes after at least 6 m. What will be the minimum stopping distance, if the same car is moving at a speed of  $100 \text{ kmh}^{-1}$ ?

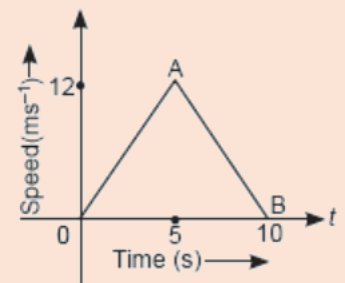
42 A car moving along a straight highway with speed of  $126 \text{ km h}^{-1}$  is brought to a stop within a distance of 200 m. What is the retardation of the car (assumed uniform) and how long does it take for the car to stop?

43 A man walks on a straight road from his home to a market 2.5 km away with a speed of 5 km/hr. Finding the market closed, he instantly turns, and walks back home with a speed of 7.5 km/hr. What is the (a) magnitude of average velocity and (b) average speed of the man over the interval of time (i) 0–30 minutes (ii) 0–50 minutes (iii) 0–40 minutes ?

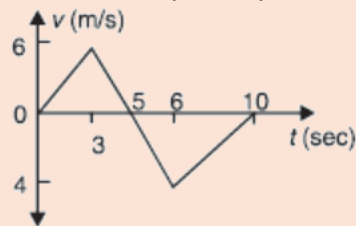
44 The speed-time graph of a particle moving along a fixed direction is shown here. Obtain the distance travelled by the particle between

(a)  $t = 0$  to 10 s, (b)  $t = 2$  to 6 s.

What is the average speed of the particle over the intervals in (a) and (b)?



- 45 A body is moving with a uniform acceleration. Its velocity after 5 seconds is 25 m/s and after 8 seconds is 34 m/s. Calculate the distance it will cover in 10th second.
- 46 Two trains each having a speed of 30 km/hr are headed at each other on the same track. A bird that can fly at 60 km/hr flies off from one train, when they are 60 km apart, and heads directly for the other train. On reaching the other train, it flies directly back to the first, and so forth.
- (a) How many trips can the bird make from one train to the other before they crash?  
(b) What is the total distance the bird travels?
- 47 A body moving with a uniform acceleration describes 12 m in 3rd second of its motion and 20 m in the 5th second. Find the velocity after 10 seconds.
- 48 A body starts from rest and travels in straight line with a uniform acceleration of  $5 \text{ m/s}^2$  for 5 seconds. What is the velocity and distance travelled in this time?
- 49 A car travelling at a speed of 10 m/s due North, turns to its left and travels with same speed. Find the change in velocity associated.
- 50 A cyclist covers first half of a length with a speed of 5 m/s and the second half with a speed of 10 m/s. What is the average speed of the cyclist?
- 51 A body covers 200 cm in the first 2 seconds and 220 cm in the next two seconds. What will be its velocity at the end of 7 seconds? Also, find the displacement in 7 seconds?
- 52 A car starting from rest, accelerates uniformly with  $5 \text{ m/s}^2$  for some time and then decelerates to come to rest with  $3 \text{ m/s}^2$ . Find the maximum velocity attained during the motion and the distance covered in a total time of 6 seconds of the journey.
- 53 Find the displacement and distance travelled by a body in 10 seconds, using the  $v - t$  graph given below :



- 54 A particle starts from rest at  $t = 0$  and has an acceleration as given in the figure below. Draw the  $v - t$  graph for 4 seconds.
- 55 A motor boat covers the distance between two spots on the river in time of 8 hrs. and 12 hrs. downstream and upstream respectively. What is the time required for the boat to cover this distance in still water?
- 56 A race car is moving on a straight road with a speed of  $180 \text{ kmh}^{-1}$ . If the driver stops the car in 25 s by applying brakes, calculate the distance covered by the car during the time brakes are applied. Assume acceleration of the car be uniform throughout the retarding motion.
- 57 A body covers 12 m in 2nd second and 20 m in 4th second. Find what distance the body will cover in 4 second after 5th second.
- 58 It must be clearly understood that distance is not the same as displacement. Distance is a scalar quantity and is given by the total length of the path travelled by the body in a certain interval of time. Displacement is a vector quantity and is given by the shortest distance (in a specified direction) between the initial and the final positions of the body. The direction of the displacement vector is from the initial position to the final position of the motion. Speed is a scalar quantity. The average speed and average velocity are different in many respect. The direction of the velocity vector is the same as that of the displacement vector. Acceleration is defined as the rate of change of velocity and it is a vector quantity.
- (i) Distance and displacement are equal in magnitude when
- (a) A body is moving in the opposite direction.  
(b) A body is moving in the straight line in a specific direction.  
(c) A body is moving in any path, but in a specific direction.  
(d) A body is moving in the straight line but in opposite direction.
- (ii) The area under velocity-time graph signifies
- (a) acceleration of the body (b) displacement of the body  
(c) average velocity of the body (d) retardation of the body
- (iii) The slope of position-time graph represents (at any instant)
- (a) Average velocity (b) Acceleration (c) Instantaneous velocity (d) Instantaneous acceleration
- (iv) When a body is moving in a circular path with uniform speed, the average velocity during one complete revolution is
- (a) 1 (b) Zero (c)  $r$  is radius of circular path (d) Speed  $\times$  Time



## SUBJECT:- BIOLOGY

Practice the NCERT line by line - Chapter 1,2 & 3 (From pdf's already shared with you)

Prepare Practical File (as per instructions shared with you)

## SUBJECT:-MATHS

Q. 1: The sum of an infinite G.P. is 16 and the sum of the squares of its terms is  $153\frac{3}{5}$ . Find the common ratio and fourth term of the progression.

Q.2: If  $S_1, S_2, S_3$  are the sums of first  $n, 2n, 3n$  terms of a G.P., then show that  $S_1(S_3 - S_2) = (S_2 - S_1)^2$ .

Q.3: Sum the series :  $(x + y) + (x^2 + xy + y^2) + (x^3 + x^2y + xy^2 + y^3) + \dots$  upto  $n$  terms.

Q.4: If  $x = a + \frac{a}{r} + \frac{a}{r^2} + \dots \infty$ ,  $y = b - \frac{b}{r} + \frac{b}{r^2} + \dots \infty$  and  $z = c + \frac{c}{r^2} + \frac{c}{r^4} + \dots \infty$  where  $|r| > 1$  show that  $\frac{xy}{z} = \frac{ab}{c}$ .

Q.5: Three numbers whose sum is 70 are in G.P. If each of the extremes is multiplied by 4 and the mean by 5, the numbers will be in A.P. Find the numbers.

Q.6: The lengths of the sides of a triangle form a G.P. If the perimeter of the triangle is 37 cm and the shortest side is of length 9 cm, find the lengths of the other two sides.

Q.7: The lengths of three unequal sides of a rectangular solid block are in G.P. The volume of the block is  $216 \text{ cm}^3$  and its surface area is  $252 \text{ cm}^2$ . Find the length of the longest edge.

Q.8: If the  $p^{\text{th}}$  and  $q^{\text{th}}$  terms of a G.P. are  $q$  and  $p$  respectively show that its  $(p + q)^{\text{th}}$  term is  $\left(\frac{q^p}{p^q}\right)^{\frac{1}{p-q}}$ .

Q.9: If  $S$  be the sum,  $P$  be the product and  $R$  be the sum of the reciprocals of three consecutive terms of a G.P. then find  $P^2R^3 : S^3$ .

Q.10: There are  $n$  arithmetic means between 3 and 17. The ratio of the first mean to the last mean is 1:3. Find  $n$ .

Q.11: Two dice are thrown.

(i) What are the odds in favour of getting the sum 5?

(ii) What are the odds against getting the sum 6?

Q.12: A die is loaded in such a way that each odd number is twice as likely to occur as each even number. Find  $P(G)$  where  $G$  is the event that a number greater than 3 occurs on a single roll of the die.

Q.13: Three dice are thrown simultaneously. Find the probability of getting a total of at least 6.

Q.14: Four persons A, B, C and D have applied for the assignment to coach a school cricket team. If A is twice as likely to be selected as B, B and C are given the same chance of being selected, while C is twice as likely to be selected as D, what are the probabilities that (i) C will be selected (ii) A will not be selected?

Q. 15: There are three mutually exclusive and exhaustive events  $E_1, E_2$  and  $E_3$ . The odds are 8:3 against  $E_1$  and 2:5 in favour of  $E_2$ . Find the odds against  $E_3$ .

16. If  $A = \{1, 3, 5, \dots, 17\}$  and  $B = \{2, 4, 6, \dots, 18\}$  and  $N$  the set of natural numbers is the universal set then show that  $A' \cup (A \cap B) \cap B' = N$

17. Let  $x_1, x_2, x_3, x_4, \dots, x_n$ . If each observation increased, decreased, multiplied, or divided by a non zero constant  $a$ , then the mean also increased, decreased, multiplied or divided by the same constant  $a$ . In case of variance, if each observation is increased or decreased by the same constant then variance remains unchanged. But on multiplying or

dividing each observation by same non-zero constant  $a$ , the variance  $\sigma^2$  becomes  $\sigma^2 a^2$  or  $\frac{\sigma^2}{a^2}$  respectively. So, we can say that variance is independent of change of origin but not of scale. Based on above information, answer the following questions:

(i) The mean of 10 observations is 18. If each observation is increased by 2, then find the new mean.

(ii) The mean of 7 observations is 25. If each observation is decreased by 3, then find the new mean.

(iii) The mean of  $n$  observations is  $\bar{x}$ . If each observation is multiplied by same non zero constant  $k$ , then find the new mean.

Or

The variance of 20 observations is 6.5 . If each observation is increased by 4 , then find the new variance.

18. The mean and standard deviation of some data for the time taken to complete a test are calculate with the following result:

Number of observations =25, mean = 18.2 seconds, standard deviation= 3.25 seconds. Further , another set of 15 observations  $x_1, x_2, x_3, x_4, \dots, x_{15}$  also in seconds is now available and we have

$$\sum_{i=1}^{15} x_i = 279 \text{ and } \sum_{i=1}^{15} x_i^2 = 5524$$

Based on above information ,answer the following questions

- (i) Find the sum of all 40 observations.
- (ii) Find the mean of all 40 observations
- (iii) Find the sum of squares of all 40 observations.

Or

Find the standard deviation of all 40 observations.

19. An urn contains of twenty white slips of paper numbered from 1 to 20 and ten red slips of paper numbered 1 to 10 and ten blue slips of paper numbered 1 to 10, forty yellow slips of paper numbered 1 to 40. These 80 slips of paper are thoroughly shuffled so that each slip has equal chance of being drawn. A slip is drawn at random from the urn.

Based on above information answer the following questions :

- (i) Find the probability that the slip drawn is blue or white.
- (ii) Find the probability that the slip drawn is numbered 1,2,3,4,5.

(iii) Find the probability that the slip drawn is red or yellow and number 1,2,3 or 4

Or

Find the probability that the slip drawn is white and number higher than 12 or yellow and numbered higher than 26.

20. Competitive Exams are considered an egalitarian way to select worthy applicants without risking influence peddling, bias or other concerns. Self-motivated and hard worker candidates find these exams very simple.to clear a prestigious competitive exam to get admission in a world reputed college , a student has 75% chances of passing in at least one subject out of three subjects A, B, and C , 50% chances of passing in at least two subjects and 40 % chances of passing in exactly two subjects.,

Based on above information answer the following questions

- (i) What is the value of  $P(A \cup B \cup C)$  ?
- (ii) What is the probability that student is not to clear any of three subjects?
- (iii) What is the value of  $P(A \cap B) + P(B \cap C) + P(A \cap C)$  ?

Lab Activities: -

- To demonstrate that the Arithmetic mean of two different positive numbers is always greater than the Geometric mean.
  - To verify distributive law for three given non-empty sets A, B and C.
  - To write the sample space, when a coin is tossed once, two times, three times, four times.

### **SUBJECT:- MUSIC VOCAL**

**Brief history of the following -**

- Lay, Taal, Nibadh-Anibadh Gaan, Dhruvad & khayal.
- Description of Taals with Taal Notation -
  - Ektaal, chautaal, kehava & Dadra.
- Biographies of Pandit Vishnu Narayan Bhatkhande, Tansen
- Musical elements in Natya Shastra.

**Note -**

- Write and learn whole syllabus along with MCQs.
- Do more singing Practice of Ragas through YouTube.



## **SUBJECT:-PAINTING (SCIENCE STREAMS)**

### **Theory –**

- Unit-1 Six limbs of Indian Painting and Fundamentals of Visual Arts (Elements and Principles of Art),Pre Rock Paintings and Art of Indus Valley.
- Learn MCQs, Short Questions, Long Questions from Unit 1 & write in a fair Notebook.

### **Practical -**

- Two Compositions
- Two Landscapes
- Two Still life (copied work)

## **SUBJECT:-PHYSICAL EDUCATION**

- Practical-1 Fitness test administration (SAI Khelo India Test) Age category 9 to 18 yrs
- Practical -2 Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.
- Practical- 3 Game Badminton
- Labelled diagram of field & Equipment. Also mention its Rules, Terminologies & Skills..
- **Note –** Make the files in a neat and clean manner , no Pasting allowed.

## **SUBJECT:-MASS MEDIA**

### **PRACTICAL**

1. **Film Analysis:** Watch a critically acclaimed film of your choice and write a detailed analysis focusing on its narrative structure, cinematography, editing, and sound design. Discuss the film's themes, message, and the director's stylistic choices. Include examples and references to support your analysis.
2. **A3 CHART MAKING :**Students will make A3 Charts or Posters on the following topics –
  - What is Mass Communication? **(XI MED)**
  - What are the different types of mass mediums? **(XI NON MED – A)**
  - What is Journalism? **(XI NON MED – B)**
  - Career options in Journalism and Mass communication **(XI COM – B TILL ROLL NO. 25)**
  - Basics of Graphic Design **(XI COM – B ROLL NO. 25 ONWARDS)**
  - Relationship between Music and cinema **(XI COM C AND XI ARTS – A TILL ROLL NO. 20)**
  - What is logo design? What are the different types of logos? **(XI ARTS A – ROLL NO. 20 ONWARDS)**
  - Table - Natural Abilities of a Human Being **( XI ARTS – B TILL ROLL NO. 25)**
  - Different types of shots in Photography **( XI ARTS - B ROLL NO. 25 ONWARDS)**
3. **VLOG MAKING :-**Make a VLOG on any topic of your choice (Travel, Food, fashion, make up etc) It should have a starting and an ending (Thanks for Watching) animated video (you can use Canva for the same.)

### **THEORY**

- Revise all the completed chapters thoroughly.
- Make a list of 20 objective questions from each chapter and bring it in written or typed form.

## **SUBJECT:-LEGAL STUDIES**

**OBJECTIVES OF THE PROJECT:** The project work aims to enable students to:

- identify a legal problem and provide its remedy
- select relevant legal sources and conduct research
- analyze and distinguish between types of cases
- apply case laws and relevant statutory laws

**Students can opt for any ONE Project from the three topics given below:**

**Topic 1:** Students can prepare a research project addressing legal issues related to any topic from the textbook or around them that needs immediate redressal.

Some suggested topics-

- Uniform Civil Code
- Law reforms in India
- Juvenile Justice
- Death Penalty
- Any other course related topic

**OR**

**Topic 2-** Students can conduct research and draft a report on any recent legislation/ amendment that brought about a social change, for example: Consumer Protection Act, Information Technology Act, Right to Information Act etc.

To conduct research students can examine the conditions that give rise to need for law reform; the agencies of reform; mechanism of reform; assess the effectiveness of law reform in achieving just outcomes with regards to the issue.

### **METHODOLOGY FOR TOPICS 1 & 2:**

The project file should be at least 15 pages. Steps:-

- Choose a topic
- Gather information from various sources
- Write a statement of purpose of the project
- Support it with research evidence
- Presentation of project should include headings
- List the sources

**OR**

### **Topic 3- Understanding the important elements of 'JUDICIAL DECISION'**

**OBJECTIVES-**The project work aims to enable students to:

- Identify a legal problem and provide its remedy
- Select relevant legal sources and conduct research
- Analyze and distinguish between types of cases
- Apply case laws and relevant statutory laws
- Understand parts of a judicial decision

### **METHODOLOGY FOR TOPIC 3:**

1. The student is required to select any 5 decided cases where in one case is of criminal nature, one is of civil nature, one is constitutional, one is related to international law and one is of student's choice (PIL if possible).

2. The research on the cases must include the following points:

- a. Name of the case
- b. Parties to the case
- c. Nature of the case (Civil, Criminal or Constitutional)
- d. Facts of the case and issues involved
- e. Decision of the case
- f. Citation of the case

#### **RUBRICS FOR ASSESSMENT**

S.no.	Parameters for assessment	Marks
1	Preparation and presentation of file	5 marks
2	Research work	5 marks
3	Understanding and application of legal concept	5 marks
4	Viva	5 marks
<b>Total</b>		<b>20 marks</b>

### **SUBJECT:-HOME SCIENCE**

- To prepare practical files and to prepare few recipes of low budget and different food groups at home.

### **SUBJECT:-PSYCHOLOGY**

**You have to conduct a psychological inquiry by following the steps mention in chapter 2**

Important things to be noted:-

- Mention and use appropriate method of research
- Mention and identify External Variables
- Mention any technique you are using to minimize the EV

**YOU HAVE TO MAKE POWER POINT PRESENTATION FOR THE SAME.**

### **SUBJECT- IP & CS**

1. Differentiate between system software and application software.
2. What task does the code generation face of the compiler perform?
3. How memory management does takes place in an operating system?
4. How does processing takes place in a computer?
5. What do you mean by an interpreter? Explain.
6. What does cross platform language mean?
7. Define Literal, Variable, Identifiers
8. State the different data types used in python.
9. What do you mean by Keywords?
10. Write a python code to input two numbers display the numbers after swaping them without using built in functions or a third variable.

Hint-sample input: a=95 b=46

Sample output a=46 b=95

11. Write a python code to enter a number .if the number is a positive even number then display three successive even numbers. If the number is a negative odd number, then display three preceding odd numbers otherwise display "Number is neither a positive even nor negative odd".

Sample input=-21

Sample input=-34

Sample output: -23,-25,-27

Sample output: 36,38,40

Sample Output:- Number is neither positive even nor negative odd.

12. Write a python code to input three different single digit numbers between 1 and 9 ( both inclusive).Display the greatest and the smallest three digit number.

Sample Input:- 8,3,5

Sample Output:- Greatest three digit Number=835

Smallest three digit number=358

### **SUBJECT:-YOGA**

- To prepare practical files

**Topics for Practical File:-**

- Make a flow Chart of Asana and Define any two Asana and its Sub types with Diagram , Benefits and methods. .

**Note** – Make the files in a neat and clean manner as it would be evaluated for your finals.